

**RF PHASE DELAY LINES WITH VARIABLE  
DISPLACEMENT FLUIDIC DIELECTRIC**

**ABSTRACT**

A phase delay line (110). The phase delay line can include an RF transmission line (111) and a fluid channel (109) having a serpentine configuration. The transmission line can be coupled to a solid dielectric substrate material (102), for example a substrate formed from a low temperature co-fired ceramic material. The fluid channel can be coupled to the RF transmission line along at least a portion of a length of the transmission line. A phase delay of the RF transmission line can be selectively varied by adjusting a distribution of the fluidic dielectric (130) present within the fluid channel. Similarly, the phase delay of the RF transmission line also can be maintained constant as an operational frequency of the RF transmission line is varied.